

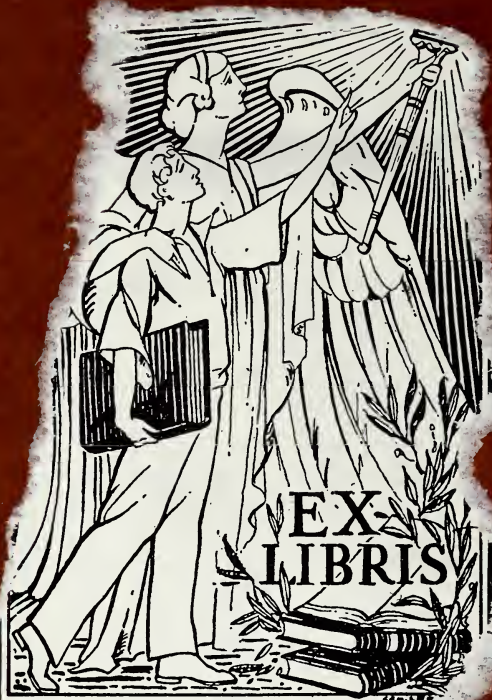
ROYER, B. Franklin

HIGH LIGHTS ON THE CONSERVATION  
OF VISION

HV 2333 R

HV 2333

R



AMERICAN

TION

FOR THE

## Department of Nursing Education

EDITED FOR THE NATIONAL LEAGUE OF NURSING EDUCATION BY NINA D. GAGE, M.A., R.N.

### High Lights on the Conservation of Vision<sup>1</sup>

B. FRANKLIN ROYER, M.D.

ONE person out of each one thousand residing in the forty-eight sovereign states has too little vision for occupations requiring eyesight. Many thousands of these afflicted never know the light of day and most of them can have no full appreciation of the glories of the changing seasons. This large army of Americans, a hundred thousand, fighting in the dark in the states, and one-fifth as many more fighting similarly in the Islands and Territories over which wave the Stars and Stripes, constitutes one of America's big welfare problems.

Much has been accomplished by our efforts to make the lot of the blind tolerable. Modern methods of education, and training adapted to the needs of the blind, printing and writing adaptations, intense cultivation of the remaining special senses, the fitting of the individual blind for special jobs not requiring eyesight, these things have all contributed mightily to the social welfare and economic status of the blind.

The skills acquired by many blind are truly amazing. We give to those things making for improvement in their welfare until it almost hurts, but always with the thought that the doors of hope and opportunity shall be held

ajar for them. With all this commendable philanthropy, do we give sufficient thought to the sources whence comes blindness, and needless wear and tear of the organ of vision? Are we possibly continuing the same evil influences year by year? Are we getting at the causes and drying up the destructive floods at their source, or are we permitting ourselves to whirl along in the vortex of the flood in both thought and action.

Present-day experience would indicate that five million children of school age (one of every five) at home and nearly a million under our jurisdiction are in need of special medical care for conditions showing some eye manifestation, or should be given reading aids or care, for local eye reasons, and that 25,000 of school age should, in justice to their condition of eye health, be placed in sight-saving classes.

In addition to these compelling appeals suggested by the figures quoted, an increasing number requiring optical aids will be found during the employment period up to mid-life, while at mid-life and later, nearly all whose jobs are indoors or require close vision will benefit by optical aids.

To summarize the figures in part only, we account for more than 100,000 blind and for five million requiring eye care or systemic treatment for affections manifest in the eye before

<sup>1</sup> Address, at Conference on the Conservation of Vision, N. L. N. E., Atlanta, Ga., May, 1931.



the end of school life, while in the latter decades, beginning with the fourth in life, nearly all need optical care or treatment.

It would take us too far afield to discuss more than the commoner causes of deterioration of vision or common causes of blindness. Generally speaking, everything causing blindness in numbers causes marked impairment of vision of considerable moment long before vision is lost. The total number of such afflictions far exceeds the total of the blind, perhaps more than five to one.

Thoughts to be kept in mind by those who are concerned with conservation of vision are that only a limited number of diseases, those chiefly infectious and of known bacterial origin, localize in the eye without some systemic involvement. Infections of the eyes of the newborn, blennorrhoeas at all ages in life, trachoma when associated with some form of blennorrhoea, would about cover the entire present-day list; while nearly all diseases of the cornea (those originating from trauma excepted), choroid, and retina, and the inflammatory diseases of the muscular structures inside the eye, are definitely believed to be associated with faults of general metabolism or with disease of some part of the body near, or perhaps remote from, the eye.

A considerable number of the acute inflammatory diseases are chargeable to focal infections in the sinuses of the head and face, or to purulent foci in tonsils, or at the roots of diseased teeth. Another large number of disturbances of eye function are associated with diseases of the abdominal and thoracic viscera, with grave errors of metabolism, and with various forms of glandular dysfunction.

Deterioration of vision, or loss of vision, is now averted by curative

medicine in larger numbers than heretofore. In bringing about cure the notable change, then, has been closer association of the general medical practitioner with the eye physician in working out an orderly plan of procedure that evaluated the human organism in relation to all of its functions as well as in relation to the highly specialized function of vision. We have always looked to curative medicine for leadership and guidance in the prevention of blindness, but for a period of years the tendency was to expect the ophthalmologist in his highly specialized field to carry the entire load of cure. Today the general practitioner of medicine and the internist each must call upon other special fields of medicine for chemical, bacteriological, or pathological evaluations in many forms of dysfunction of the human body; so, too, the eye physician has come to utilize in a curative and consultative way many medical agencies of recent origin yet of incalculable benefit in preserving eyesight. To make this point a little clearer, let us name a few diseases and the associated conditions calling for coöperative study.

Syphilis attacks every tissue in the body. Many tissues of the eye may show its manifestations, but today all eye physicians would insist that external lesions be studied under the microscope by the parasitologist or bacteriologist; that the blood of the patient, or the spinal fluid, or both, be tested for evidence of disease, a work done by biochemists or pathologists; that the most modern method of intravenous treatment be given the patient found to have any evidence of this disease, the syphilographer being brought in to give this extended, constant care while the medical-social follow-up worker holds the contact with treatment and works out the

details for familial evidence of disease and secures treatment for reservoirs of infection. In many syphilitic eye conditions, then, the actual work of the eye physician is limited largely to watching the progress of the eye manifestations of the disease yield while specific remedies are applied by the syphilographer charged with administration of chemicals directly into the central blood stream, and the most telling activity, in so far as preventive medicine is concerned, is carried on by the home visitor. The eye physician, it is true, may apply locally topical remedies to avert adhesions likely to form about the iris, or give hygienic advice regarding use of the eye, or prescribe tinted lenses to relieve photophobia; but treatment of the disease is a large problem involving all of the skills of modern internal medicine.

In determining the causes of eye lesions chargeable to focal infections, photographs by the roentgenologist are invaluable and the skill of the rhinologist, the oral surgeon, or the otologist, may be required to remove the focus of disease which is offending the eye, and is likely to cause deterioration of vision or blindness. In communities having all of these highly specialized diagnostic and curative services, much blindness may be prevented. In communities less fortunately situated in this respect some of these afflictions may continue to disaster.

With the beginning of modern public health work and the application of the principles of preventive medicine the latter part of the last century, and with the development of bacteriology, came a great wave of enthusiasm in favor of preventing every form of human disease and especially of eye disease. Slightly more than fifty years ago we began har-

nessing modern science to preventive medicine, and little by little from that day to this we have developed preventive measures and agencies which may promote these activities in campaigns aiming to conserve vision and prevent blindness. The most notable work of this sort occurred in continental Europe and is associated with the name of Karl Sigmund Franz Credé of Leipsic, who fifty years ago, on the first day of June, 1880, following a long series of trials and careful statistical checks of results, concluded that the eyes of the newborn could be spared disastrous infection by the use of a properly applied solution of silver nitrate. The dramatic decline of birth infections following the introduction of this prophylactic measure—from the average ten per cent in the maternity hospitals of Leipsic to a half of one per cent—fascinated the imaginations of those with a forward view, and led to the development of a program, now well-nigh universal in civilized countries, of more careful cleansing of the external eye tissues of the baby immediately after birth, and of using a prophylactic inside the eyelids immediately thereafter. The same impetus led to the study of the bacterial flora of the birth canal as soon as the expectant mother came under the physician's care and to the application of treatment when necessary to render the birth canal less hazardous to the eyes of the unborn baby, and the pelvic tissues of the mother less open to serious infection at the time of birth.

Present statistics indicate that in countries using the protective measures, with some modification, advocated by Credé, less than one-third of the loss of vision from infection of the eyes of the newborn occurs than was common prior to the introduction of this preventive measure.

It is worth stopping for a moment to determine how this end was brought about, and what agencies were concerned with popularizing the movement. The superficial thinker might expect that a measure of proven value would immediately be accepted by the medical profession, and at once be applied. I am not aware that any country has succeeded in establishing the use of nitrate of silver either by waiting for the medical profession to adopt this procedure, or by delaying until legal measures were enacted requiring its use. In every progressive country on either side of the Atlantic Ocean, various types of educational measures had to be utilized in order to secure application of the procedure scientifically proven to have such great protective values.

Once scientific medicine had chartered the way, all agencies interested in human welfare and society in general, which was to profit by the protective measure, had to be educated to an appreciation of the value of nitrate of silver in preventing blindness, and even to demand its application.

The movement to prevent needless loss of sight from birth infections gave the world the present-day momentum for general campaigns in the prevention of blindness. France, Great Britain, Germany, Belgium, Austria, and the Scandinavian countries were quicker to apply Credé's methods than were other continental states or those on this side of the Atlantic.

The utilization of educational forces in safeguarding vision came in the very early days of popular education when education was made available to the common people in Europe and compulsory, at later dates, on both sides of the Atlantic. About the time that Credé was doing his notable work in protecting the eyes of the

newborn, Cohn of Breslau, Elsberg of St. Petersburg, Risley of Philadelphia, Derby of New York, and a score of others in various parts of the world, began active studies of the causes of degeneration of eyesight among those habitually and continually using the eyes as students of the printed page. From those early studies, centering largely around the increase in myopia as students passed from grade to grade in elementary and secondary public schools, in gymnasia and universities, there evolved rational procedures of eye hygiene. Scientific medicine and the sciences of printing and chemistry were called upon in efforts to produce qualities and tints of paper, colors and values in ink, sizes and faces of type, which make it possible to read the printed page with less likelihood of undue eye fatigue or of damage to vision.

With the later rapid growth of school buildings throughout the various countries, architects, builders, engineers, manufacturers of glass and makers of schoolroom equipment gradually improved plans for classrooms, for lighting of the working area of the pupil, and for orienting the desk and desk top in relation to the admission of light, with the result that great advances were made for eye comfort, eye ease, and greater safety of vision for all, and conditions were made possible under which those with seriously handicapped vision might acquire an education without further deterioration of vision.

To attain all of these hygienic advantages made possible by those agencies in general control of schools, for conserving the vision of school children alone, the parent, the pupil, the teacher, the school nurse, and physician, need to appreciate the best method of utilizing those facilities and equipments which have been provided.



During the period that this sort of practical demonstration of eye health values has been available through the school, a great amount of useful information has carried over into the home, resulting in many reformations there making for better eye health.

During the last century the world has changed from people's following petty household industries to manufacturing *en masse*—mining, the railway industries and the associated steel industries, the needlework trader, the thousand and one indoor and outdoor occupations that are full of hazards to the eye from the standpoint of accident and hard eye use.

To think through the many groups that should be concerned with minimizing such dangers is to catalogue large numbers of industries and official and unofficial agencies and institutions. Suffice it to say that much has been done, in the safer handling of chemicals and explosives, in many industries by surrounding the grinding, polishing and chipping machines with protective bands and devices, and in providing goggles for workmen. These protections are seen in every country today, and where efficiently utilized lessen the loss of eyes. It would almost appear, however, that as fast as protection is built up in one branch of industry, something new develops that has to be studied and evaluated in order to work out the protection needed.

With the coming of huge industries came rational and cleanly first-aid and great hospitals. By the joint coöperation of industrial hygienists, engineers, and nursing groups, much was accomplished in the conservation of vision and the prevention of blindness, while at a later period compensation for injuries almost placed a penalty upon the industry negligent in these particulars. It has been estimated that perhaps

fifteen per cent of adult blindness is due to eye accidents in industry and yet what the incidence might have been had protective measures not been operating in recent years no one can even approximate.

The last quarter of a century has brought protective measures in the way of artificial lighting hitherto not dreamed of. It is now possible, in all built-up sections supplied with electric current, to secure an adequate amount of electric light delivered to the working or reading plane of the individual in such amounts as may give eye comfort and eye ease. By the use of modern electroliers and shading devices, electric light in sufficient, constant volume may be secured which is almost superior to daylight for steady eye use.

As one reviews the various activities for minimizing hazards to vision one sees that the public had to be educated and prepared for certain measures for a long period of time before their use became common and that only then were legal requirements established. This as has been shown was equally true of the use of prophylactic measures to protect the eyes of the newborn. The same preparation of the public mind had to precede the mandatory requirement for notifying government officials of the incidence of transmissible eye disease. It was a basic precedent in regulations established by departments of labor and industry making mandatory the setting up of protective devices around the chipping machine, buzzing wheel and rapidly revolving grinder or polisher. Advance education of the worker and industrialist was involved in those requirements for lighting the dark and dangerous quarters of the factory or mill in order to safeguard eyes.

When one thinks of organizing

forces for the correction of vision one needs to consider utilizing representatives from every profession, from every administrative and official agency and citizens from almost every walk in life, including common labor itself, each to be made fully acquainted with his responsibility and with the possibilities of saving vision by united effort. It means the gathering together by all agencies and individuals for an organized working team that will popularize the information of proven value and that will help educate those at home, in the workshop and in the school in true values of eye hygiene, in approved practices of eye protection, to a full appreciation of what the eye physician may do, to a full appreciation of what every protective and helpful device, including the wearing of goggles or corrective lenses, may do, and to appreciate when, why and wherefore, and to apply these views through organized effort. It means that organized society must be prepared to assist a considerable number of persons of limited means to secure those aids of scientific medicine that are beyond the economic reach of many. It means a great outlay of effort on the part of those with forward vision to spread the truth by popular instruction disabusing minds of misinformation and superstition and making easily available measures of definitely proven value in saving vision. In many communities it means organizing diagnostic and treatment centers and providing follow-up social workers who become interpreters of modern science in terms readily understandable by all. It means the nurse equipped as teacher and interpreter.

Speaking more specifically to this question you raise, the relationship between eye health and physical and mental health are indeed most inti-

mate and retroactive each part on the other. The eye being a highly specialized outpost of the brain naturally shares through the sympathetic nerve centers all pains and strains, worries, wear and tear from excess work, or disease, reciprocally with other parts of the body.

That eye defects are contributing factors in delinquency, maladjustments and dependency may readily be proven by contrasting physical examination findings of those in the custody of juvenile courts, domestic relations courts, et cetera, against the offenses charged, or against the records of public welfare departments.

As to the third question concerning registration of information in nursing education so that the average graduate nurse sees the relationship of the eye to the whole physical man it might be better if you would secure the answer from some recent graduate nurse. I may venture to say, however, that such knowledge will rarely be found registered effectively with the young doctor of medicine. It would not cause great chagrin, therefore, to learn that the average nurse at the time of graduation has not fully grasped the essential relationship between the eye and the body as a whole, great as may seem the need that she should do so.



## Efficient Hospital Management

AT least five groups of persons have a direct practical interest in the economical and efficient management of hospitals: (1) trustees and supporters of hospitals, chiefly business men; (2) public officials who vote taxes and appoint directly officials for hospitals; (3) the medical profession; (4) professional hospital administrators and their organizations; and (5) the national agencies—public health, medical, science, social service. Adequate training for leadership in hospital management is essential.—*Miscellaneous Contributions on the Costs of Medical Care*, No. 8.



Bno-Dart INDUSTRIES

